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the production of the capital goods employed, multiplied by the rate of interest. But the higher the interest rate and the higher the value of the materials which require accumulation—and their value may surpass the consumers' power of purchase—the less profitable is it to choose remote methods of production because they would raise the price of the materials too high.

Professor Fisher's remarks concerning the influence of the variation in the value of money on the rate of interest do not completely convince me. He supposes a capitalist lends, at 5 per cent., 1,000 gold units, equivalent now to 1,000 hectoliters of grain, agreeing to return it at the end of a year either in gold or grain, and that at the end of the year the value of 1 gold unit is raised to 1.01 hectoliters of grain. If he supposes the debtor to pay his debt in gold, he will pay at the end of a year 1,050; that is to say, he will actually pay an interest of 5 per cent., but if he pays his debt in grain he must pay 1,060.50 hectoliters of grain because that quantity is exactly equivalent to 1,050 gold units. He pays, Professor Fisher says, an interest of 60.50 hectoliters of grain; that is to say, he pays on the capital received an interest of $\frac{60.50}{1,000}$ or 6.05 per cent.

Now, according to my view, this is not true, for out of the 1,060.50 hectoliters of grain paid by the debtor, 1,010, and not only 1,000, represent the reimbursement of the capital; that which is equivalent actually to 1,000 is exactly 1,010 hectoliters of grain; consequently 50.50 hectoliters represents only the interest.

Therefore the rate of interest measured in grain is $\frac{50.50}{1,010}$ —5 per cent., or is exactly equal to the rate of interest measured in money. Restated: The variations in the value of money offset exactly the value of the interest measured in grain, but as it affects in the same proportion the value of capital measured in grain, it leaves unaltered the rate of interest measured in grain.

ACHILLE LORIA

REPLY BY PROFESSOR IRVING FISHER TO PROFESSOR LORIA'S CRITICISM OF "THE RATE OF INTEREST"

In Professor Loria's brief criticism, he says he is surprised that I overlooked the fact that capital employed in different enterprises may easily yield different rates of profit. From this statement it

would appear that he himself has overlooked the passage in which I give attention to this subject in *The Nature of Capital and Income* (pp. 279-283), which was written largely as an introduction to *The Rate of Interest*, as well as in *The Rate of Interest* itself (especially chap. X). I have taken into account the existence of differing rates of profit. I do not follow Professor Loria's reasoning when he states that my theory presupposes a perfect and uniform adjustment of profits and interest.

Professor Loria and I, it is evident, disagree widely on the general theory of value, and it would be impossible for either of us in a short statement to justify his view; but while I reject the cost theories of value, and accept in general the Austrian theory, I believe, as I have stated in *The Nature of Capital and Income* (chap. III and X), and in *The Rate of Interest* (pp. 19, 20) that the cost of production plays a rôle in determining value. The past cost of production *indirectly* determines value by adjusting supply, and *future* cost, or expected cost of production, determines value *directly* by being discounted.

As to Professor Loria's criticism regarding the rate of interest in the illustration above referred to, it seems to me that Professor Loria is here taking unconsciously an exclusively monetary point of view. If one clings to the gold standard as an ideal, it would be natural that all the figures of the wheat standard should be translated in terms of gold, but it is a poor rule that won't work both ways. If we translate gold into wheat, we may prove by the same reasoning that the rate of interest, in the example given, instead of being 5 per cent., is really 6.05 per cent. both in wheat and in money.

In fact those who, like the bimetallists in the recent monetary controversy, believe that gold was "appreciating" in value, and that wheat was a stable standard, might reason in respect to the above example as follows: "It is quite true that \$1,000 of gold today is exchanged for \$1,050 one year hence, so that *apparently* the rate of interest is 5 per cent.; it must be remembered that the gold principal has appreciated 1 per cent. At the start, this principal was the equivalent of 1,000 units of wheat; but at the end of the year, the \$1,000 of so-called 'principal' paid back is really more than the equivalent of the original principal of \$1,000. To be exact the part which is the equivalent of the original principal is only \$990.10. If we should subtract this, the true principal, from

the entire sum \$1,050, which is paid back, we find \$59.90 as the true interest. The ratio of this \$59.90 to the 'true' principal, \$990.10, or $\frac{59.90}{990.10}$ is not 5 per cent., but 6.05 per cent. Consequently, according to this reasoning, the rate of interest in gold is not 5 per cent., but 6.05 per cent."

I do not mean to take the side of the bimetallist as against Professor Loria, for in a sense both are right. The rate of interest is *either* 5 per cent. as measured in the gold standard, *or* 6.05 per cent. as measured in the wheat standard. The mere fact that gold is the standard in which debts are usually expressed should give no special preference to it. In fact if we take silver in place of wheat, any such reason for translating everything into gold will disappear. Let us imagine two men, one in Texas, and one in Mexico, making a contract. The Mexican would naturally express the contract in silver and the American in gold. In whichever of the two standards the contract is actually written, the other standard would be translated into it in the manner above suggested by Professor Loria. If it should be true that the equivalent rates of interest were 5 per cent. in American money or 6.05 per cent. in the Mexican, it would be impossible to make out a case in favor of either of these standards as "absolute." Rather should we regard them merely as alternative standards and the rates of interest as either 5 per cent. or 6.05 per cent., according to which of the two standards is taken as a basis.

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